

Installation Guide **Tracer® Ensemble**™



A SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.

December 2024

BAS-SVN024H-EN





Introduction

Read this manual thoroughly before operating or servicing this unit.

Warnings, Cautions, and Notices

Safety advisories appear throughout this manual as required. Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

The three types of advisories are defined as follows:



Important Environmental Concerns

Scientific research has shown that certain man-made chemicals can affect the earth's naturally occurring stratospheric ozone layer when released to the atmosphere. In particular, several of the identified chemicals that may affect the ozone layer are refrigerants that contain Chlorine, Fluorine and Carbon (CFCs) and those containing Hydrogen, Chlorine, Fluorine and Carbon (HCFCs). Not all refrigerants containing these compounds have the same potential impact to the environment. Trane advocates the responsible handling of all refrigerants.

Important Responsible Refrigerant Practices

Trane believes that responsible refrigerant practices are important to the environment, our customers, and the air conditioning industry. All technicians who handle refrigerants must be certified according to local rules. For the USA, the Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering and recycling of certain refrigerants and the equipment that is used in these service procedures. In addition, some states or municipalities may have additional requirements that must also be adhered to for responsible management of refrigerants. Know the applicable laws and follow them.

A WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury.

All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.



A WARNING

Personal Protective Equipment (PPE) Required!

Failure to wear proper PPE for the job being undertaken could result in death or serious injury. Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, MUST follow precautions in this manual and on the tags, stickers, and labels, as well as the instructions below:

- Before installing/servicing this unit, technicians MUST put on all PPE required for the work being undertaken (Examples; cut resistant gloves/sleeves, butyl gloves, safety glasses, hard hat/bump cap, fall protection, electrical PPE and arc flash clothing).
 ALWAYS refer to appropriate Safety Data Sheets (SDS) and OSHA guidelines for proper PPE.
- When working with or around hazardous chemicals, ALWAYS refer to the appropriate SDS and OSHA/GHS (Global Harmonized System of Classification and Labelling of Chemicals) guidelines for information on allowable personal exposure levels, proper respiratory protection and handling instructions.
- If there is a risk of energized electrical contact, arc, or flash, technicians MUST put on all PPE in accordance with OSHA, NFPA 70E, or other country-specific requirements for arc flash protection, PRIOR to servicing the unit. NEVER PERFORM ANY SWITCHING, DISCONNECTING, OR VOLTAGE TESTING WITHOUT PROPER ELECTRICAL PPE AND ARC FLASH CLOTHING. ENSURE ELECTRICAL METERS AND EQUIPMENT ARE PROPERLY RATED FOR INTENDED VOLTAGE.

Follow EHS Policies!

Failure to follow instructions below could result in death or serious injury.

- All Trane personnel must follow the company's Environmental, Health and Safety (EHS) policies when performing work such as hot work, electrical, fall protection, lockout/ tagout, refrigerant handling, etc. Where local regulations are more stringent than these policies, those regulations supersede these policies.
- Non-Trane personnel should always follow local regulations.

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Factory Training

Factory training is available through Trane University[™] to help you learn more about the operation and maintenance of your equipment. To learn about available training opportunities contact Trane University[™].

Online: www.trane.com/traneuniversity

Email: traneuniversity@trane.com



Revision History

- Updates to the System Requirements and Specifications section .
- Updates to Windows Server versions.
- Updated and expanded the list of supported web browsers.



Table of Contents

System Requirements and Specifications
SQL Database Size
Configure Microsoft Windows Server
Initial System Configuration
Network and Regional Settings
Roles and Services 10 Windows Server Roles 10 .Net Framework 10
Installation and Configuration on non-Latin Based Servers
Install and Configure SQL Server 11
Database Setup 11 Create the Database 12 Create the Database Structure 12
Manually Upgrading the Tracer Ensemble Database
Install Tracer Ensemble Application 15
Tracer Ensemble First Login
Licensing
SAML SSO Setup
System Requirements
Setup Requirements
Verify SAML License
Configuration
Adding New Users to SAML 26
Updating Tracer® Ensemble
Advanced Configurations and Functions
Windows Services
HTTPS and SSL – Secure Communications Configuration
Appendix A: Virtual Machine Requirements
HyperV Configuration
VMware ESX(i)
Appendix B: Advanced SQL Configuration
Appendix C: Backup and Restore
Backup



Restore	37
Appendix D: Direct Link with Tracer SC	39
Configuring Tracer SC for Direct Link	39
Configuring Tracer Ensemble for Direct Link	40
User Access to Direct Links	41



System Requirements and Specifications

Server Requirements

Operating System:	Microsoft Windows Server 2016, 2019, 2022							
	.NET 4.7.2							
Database:	Microsoft SQL Server 2014, 2016, 2017, 2019, 2022							
	*SQL 2022 Required for BACnet® Secure Connect							
Network Interface:	TCP/IP							
Minimum Requirements:	Configuration	Server Type	Processor	Memory	Hard Drive			
	Application server	Virtual ^(a)	2 vCPU ^(a)	8 GB	NAS/SAN			
	Application server	Tower or rack-mount	3.0 GHz - 4 Core	8 GB	73 GB Min			
	Application server with SQL database	Tower or rack-mount	3.0 GHz - 4 Core	8GB/16GB+(b)				
	Ensemble Cloud	Custom Web address, backed by Amazon, no upgrade limits						

Note: Ensemble Cloud is hosted in the Amazon Web Services® (AWS®) environment. Each customer is assigned their own virtual web and application server. Tracer® Ensemble installations can transition from an installation On-Premises Server to AWS and vice-versa. Tracer Ensemble Cloud is a Software as a Service (SaaS) solution where Trane takes consistent care of system upgrades and backups.

BACnet® Network Requirements

Architecture:	TCP/IP
Utilization:	Low
Protocols:	BACnet® (ASHRAE Std 135-2004)
	http (port 80)

User Interface Network Requirements

Tracer® Ensemble	http (port 80)
Web UI:	https (port 443) ^(c)
	BACnet/SC (TCP Port 47808)
Server:	Remote Desktop Connection ^(d) (RDP) port 3389
	VPN recommended
Utilization:	Load dependent on number of users and web page customizations

(a) Virtual Server needs to be configured to allow the Processor Serial Number (Processor ID) to be persisted. This is used by Tracer® Ensemble for licensing purposes.

Medium-large sites should consider using 16GB+ of memor (RAM). (b)

(c) Https requires additional configuration and installation of certificate.

^(d) Remote desktop connection is recommended for support; additional configuration is needed for RDP and VPN.

SQL Database Size

The size of the SQL database Tracer® Ensemble uses will depend directly upon on:

- How much equipment is being monitored.
- The number of points on each piece of equipment.
- The frequency of data logs being captured.
- The length of time data logs are kept.

The following tables approximates the size of the Tracer Ensemble SQL database to grow given 200, 500, and 1000 pieces of equipment over 1 and 3 years.

200 Equipment 5 points each	1 Year of Data	3 Years of Data
15 min	3.51 GB	10.53 GB
10 min	5.27 GB	15.8 GB
5 min	10.5 GB	31.6 GB

500 Equipment 5 points each	1 Year of Data	3 Years of Data
15 min	8.78 GB	26.3 GB
10 min	13.2 GB	39.5 GB
5 min	26.33 GB	79.0 GB

1000 Equipment 5 points each	1 Year of Data	3 Years of Data
15 min	17.56 GB	52.67 GB
10 min	26.33 GB	79 GB
5 min	52.67 GB	158 GB



Configure Microsoft Windows Server

Important: Beginning with Tracer® Ensemble 5.1, the application will automatically configure these roles and settings during the installation process. Follow these instructions if installing an older version of Tracer Ensemble or to verify a setting.

Initial System Configuration

This subsection provides steps for setting up a new server running Window Server Standard OS on which you plan to run Tracer® Ensemble software with a local SQL database. The instructions assume that the server operating system is a fresh out-of-box installation and is being powered up for the first time. Skip any steps that have already been completed for this server.

Information Needed

Important: Your Windows Server Operating System must not be configured as a domain controller. Applying the domain controller role prevents installing Tracer® Ensemble on that server.

Before you begin the configuration, get answers to the following questions from your IT organization:

- · What IP address, Subnet mask, and Default gateway will the server use?
- What is the network name and workgroup or domain name (if applicable) of the server?

Network and Regional Settings

To configure the server:

- 1. Power up the server with all of the peripherals connected.
- 2. Set the new Administrator password and record it in a safe location. The Initial Configuration Tasks window appears.
- Click Set time zone, and then complete the time zone and date and time settings according to your region.
- 4. Click **OK**. You will return to the Initial Configuration Tasks window.
- 5. Click Configure networking, and then complete the following steps:
 - a. Double-click Local Area Connection.
 - b. In the Local Area Connection Status window, click **Properties**.
 - c. On the Networking tab, double-click Internet Protocol Version 4 (TCP/IPv4).
 - d. In the Internet Protocol Version 4 (TCP/IPv4) Properties window, select Use the following IP address, and then type in each of the three addresses provided by the IT organization. If you do not know the correct IP Address, you can temporarily use 172.16.1.82 or any other private address.
 - e. Click OK. You will return to the Local Area Connection properties.
- 6. Click OK. You will return to the Initial Configuration Tasks window.
- 7. Click **Provide computer name and domain**. The Computer Name tab on the System Properties window appears.
- 8. Optionally, type a description in the Computer description field.
- 9. Click Change. The Computer Name/Domain Changes window appears.
- 10. Replace the text in the Computer name with the computer name provided by the IT organization.
- 11. Click **OK**, and then reboot the server. Upon reboot, you return to the Initial Configuration Tasks window.
- 12. Click **Provide computer name and domain**. The Computer Name tab on the System Properties window appears.
- 13. Click Change. The Computer Name/Domain Changes window appears.
- 14. Select Domain or Workgroup with the information provided by the IT organization.
- 15. Click OK, and then reboot the server. Upon reboot, you return to the Initial Configuration Tasks

window.

16. Click Close.

Roles and Services

Tracer® Ensemble requires features of the server operating system to be installed to operate correctly. Each server version is slightly different in the setup and configuration of these features. The summary of these features are:

Windows Server Roles

Application Server Role Services:

- .Net 4.72
- .Web Server (IIS) Support

Web Server (IIS) Role Services:

Common HTTP Features

- Default Document
- Directory Browsing
- HTTP Errors
- Static Content
- Health and Diagnostics
- HTTP Logging
- Logging Tools
- Request Monitor
- Performance (all)
- Security
- Request Filtering
- Performance
- Static Content Compression

Application Development

- .Net 4.72
- ISAPI Extensions
- ISAPI Filters
- Management Tools
- IIS Management Console
- IIS Management Scripts and Tools
- IIS Management Compatibility (all)

.Net Framework

Tracer® Ensemble requires .Net 4.7.2 to be installed on the server and will do this automatically during the installation process. If the server does not have an Internet connection, .Net will need to be downloaded manually and installed manually separately.

Installation and Configuration on non-Latin Based Servers

This section covers known issues with installation and configuration on a non-Latin based server, including, but not limited to: Chinese, Japanese, Korean, and other complex script languages.

Tracer Ensemble Installation

Installing Tracer® Ensemble on a non-Latin based server requires special handling of the current SQL scripts that are used for database creation and updates:

- 1. Create the database in Latin-based script language.
- 2. Change the language for non-Unicode programs complex script display language to English.
- 3. Run the appropriate SQL scripts that are needed.
- Revert the language for non-Unicode programs from English to the complex script display language of choice.
- 5. Install the Tracer Ensemble application.

Install and Configure SQL Server

See Microsoft Developers Network (MSDN) article 143219 for complete installation instructions and configuration.

Database Setup

These procedures must be performed before installing Tracer® Ensemble. Before you begin, verify the following:

- · You have a supported version of Microsoft SQL Server installed on your system.
- You have a Tracer Ensemble installation media.
- You are not performing an upgrade of Tracer Ensemble. These instructions apply only to a new database.
- **Note:** These procedures and the screen captures used are based on an older Windows Server and SQL Server version. There may be slight, undocumented differences between your installation and the installation shown if you are using a different database or operating system. See Appendix B: Advanced SQL Configuration for further details on advanced configuration.

Create the Database

To create the database:

- 1. Click Start | All Programs | Microsoft SQL Server | Microsoft SQL Management Studio.
- 2. In the Connect to Server window, complete the following tasks.
 - a. In the Server type field, select Database Engine.
 - b. In the Server name field, select the name of the database server (typically the name of the server you are using).
 - c. In the Authentication field, select Windows Authentication.
 - d. Click Connect.
- 3. Under Object Explorer, right-click Databases and select New Database.
- 4. In the New Database window, complete the following tasks:
 - a. In the Database name field, enter Tracer Ensemble.
 - **Note:** You can choose any name you like for the database, but this procedure and the screen captures in this document will use **Tracer Ensemble** as the database name. If you choose a different name, substitute your database name where appropriate.
 - b. Click OK (not Add, which would begin to create another new database).
- 5. Navigate to the newly created database to verify that it has been added.

Upon completion of these steps, the database shell is created, but its structure and Tracer Ensemble initial values are not yet in place.

Create the Database Structure

The database structure is provided on the installation disk. Complete the following procedure to apply the structure to your database:

- 1. Select File | Open | File....
- Locate and open the TracerEnsemble.db.create.sql file in the DBScripts directory at the top level of the Tracer Ensemble installation media. (Reconnect to the database engine, if prompted, to proceed.).
- 3. Select the Tracer Ensemble database.
- 4. On the Query menu, click Execute.
- 5. In the Object Explorer sidebar, expand the Tracer®Ensemble database, and then expand **Tables**. There should be a list of tables starting with dbo.

Populate the Database with Initial Values

The initial values for the Tracer® Ensemble database are provided on the installation disk. Complete the following procedure to apply the initial values to your database:

- 1. On the File menu, select Open | File....
- 2. Locate and open the **TracerEnsemble.initial.data.sql** file in the **DBScripts directory** at the top level of the Tracer® Ensemble installation media. (Reconnect to the database engine, if prompted, to proceed.).
- 3. Select the Tracer Ensemble database.

Note: Step 3 is easy to miss. Be sure that the newly created database appears in the pull-down menu.

- 4. On the Query menu, click **Execute**.
- 5. In the Object Explorer sidebar, expand the Tracer Ensemble database, and then expand **Tables**. There should be a list of tables starting with dbo.
- 6. After executing the two database scripts, the database tables should appear as in Figure 22. To perform this check:
 - a. Expand Tables.
 - b. Right-click LOV_TimeZone table, and then select Select Top 1000 Rows. You will see time

zone data in the lower right quadrant of the window as in. If the scripts were not executed properly, the table will either not be available or will not contain any data.

If the table is not available or does not contain any data, go back and re-execute the scripts.

Manually Upgrading the Tracer Ensemble Database

- Determine the current version of Tracer® Ensemble. In Tracer Ensemble navigate to Actions and Settings | System | System Status. The build will be represented as X.X.XXX. This is required to update the database manually.
- 2. Open SQL Server Management Studio.
- 3. Log in with the appropriate user account.
- 4. Within the Object Explorer, expand **Databases** and locate the database that is currently being used by Tracer Ensemble. This can be determined by the Tracer Ensemble Smart Client.
- 5. Within the Tracer Ensemble installation media, open the DBScripts folder.
- 6. Using the current version of Tracer Ensemble located in the first step:
 - a. Locate the Upgrade.X.X.XXXto.Y.Y.YYY.sql or Upgrade.X.X.XXXto.Y.Y.Current.sql script, where X.X.XXX is the current version. Y.Y. indicates the next available version. Double click on this to open the script in SQL Server Management Studio.
 - b. Select the database that you want to apply the script to. Click Execute.

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Figure 1. SQL Server

c. Execute all scripts (starting with the script selected in step a) in order until the Upgrade.X.X. XXX.to.Y.Y.Current.sql is run.

Example: Your current Tracer Ensemble system is 4.6.133. To upgrade to 4.7 (current software), Upgrade.4.6.133.to.4.6.162.sql then Upgrade.4.6.162.to.4.7.Current.sql SQL scripts must be run.

- 7. If an error has occurred during the running of the script, no changes will be committed to the database. Contact Technical Support for assistance.
- 8. To verify the upgrade of the database, expand the Tracer Ensemble Database, expand Tables.
- 9. Right click on dbo.ApplicationVersion and select **Select Top 1000 Rows**. Scroll to the bottom of the results to verify the correct version has been entered into the table.

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1 -	Saft Powersneil Reports Rename Delete Refresh Properties AtarmCustomPriority AtarmDistributionRule AtarmDistributionRule AtarmDistributionRule	10 11 12 13 14 15 16 17 18 19	13 14 15 16 17 18 19 20 21 21 22	3.5.175 4.0.149 4.0.158 4.0.159 4.0.159 4.0.170 4.5.157 4.5.167 4.6.133 4.6.162 4.6.162 4.7.122	103 85 85 85 85 105 109 118 127 54	2012/30/2 20 28 47 000 2012/05/30 1360 25 000 2012/06/21 1351 38 000 2012/06/21 1351 38 000 2012/06/20 1351 58 000 2012/12/20 1354 44 000 2013/02/26 20/22 13 000 2013/05/16 12 371 2 000 2013/05/16 12 371 2 000 2013/05/23 15 33 56 000 2013/11/01 11 31 25 000	2012-04-11 14-25-45.000 2012-07-03 13-24-07.337 2012-07-03 13-24-07.337 2013-02-05 13-24-07.430 2013-02-05 15-44-15.100 2013-02-05 15-44-15.080 2013-02-07 13-56-21.017 2013-114-04-04-459.830 2013-111-04-08-45-08.830 2013-111-04-08-45-08.830		E

Figure 2. Database Version Table



Install Tracer Ensemble Application

- 1. Load the Tracer® Ensemble installation media and wait for the Autorun program. If Autorun does not being automatically, browse to **My Computer**, right click on the disk drive, and select **AutoPlay**.
- 2. The installer will determine if the correct .Net Framework is installed. If the correct version is not installed, the Tracer Ensemble installer will download and initiate the .Net Framework installer.
 - **Note:** If Internet access is not available to the server, a manual download and installation of .Net Framework is required. Tracer Ensemble 4.7+ will not install if the correct framework is not in place.
 - a. When prompted, install the .Net Framework version.

Figure 3. Tracer® Ensemble Installer .Net Update

Tr	acer Ensemble Version 5.1 requires the following items to be installed on your
<u>ی</u> د	mputer. Click Install to begin installing these requirements.
Status	Requirement
Pending	Microsoft .NET Framework 4.5.2 Full
	Install Cancel

b. Upon installation of the .Net Framework, the Tracer Ensemble installer will proceed with installation.

Figure 4. Configuring Roles and Features



- 3. On the welcome screen, click Next.
- 4. On the Installation Type screen, select your desired method for installing Tracer® Ensemble:
 - Select **Install Tracer Ensemble and create database** if the SQL Server resides on the same server or SQL Server administrative credentials are available. With this option, the installation program will create the database and install Tracer Ensemble.
 - Select **Install Tracer Ensemble only** if the SQL Server is managed by a Database Administrator, or administrative credentials are not known. With this option the installation program will only install Tracer Ensemble; database creation and script execution have to be done manually.

- 5. On the Custom Setup screen, select the languages you want to install, and then click Next.
- 6. On the Customer Information screen, complete the fields according to your preferences, and then click **Next**.
 - User Name is usually the name of the customer who owns or administers the software.
 - **Organization** is usually the company, agency, or other organization that owns the software and the building network.
- 7. On the Destination Folder screen, accept the default destination folder (recommended) or select a different folder by clicking **Change** and specifying a different folder. Then click **Next.**
- 8. On the Network Settings screen, select a network connection, specify the BACnet® Device Instance, and then click **Next**. Here is some additional information:
 - The network connection is identified by its connection name, IP address, and the name of the network interface adapter installed.
 - The BACnet Device Instance is a unique number that the BACnet network uses for routing alarms from Tracer Summit to Tracer Ensemble. Device instance 125 is the default and should be used unless already used.

Figure 5. Network Settings

📸 Tracer Ensemble Version 5.1 - Installation Wizard 🛛 🗙
Network Settings Configure the network settings for the Tracer Ensemble server.
Select the network connection that faces the building controls network
Ethernet - 10.73.73.49 - Microsoft Hyper-V Network Adapter
BACnet Device Instance: 138
InstallShield
< Back Next > Cancel

- 9. On the Database Settings screen, complete the fields according to the Tracer Ensemble database and click **Next**.
 - · If Install Tracer Ensemble and create database has been selected:
 - Database Server is the server name of the SQL server computer. If you are not sure of the
 name, open the SQL Server Management Studio. The server name is shown on the Connect
 to Server window. If the SQL Server Management Studio is already running the server name
 is at the top level of the navigation tree, and on the title of the database when selected. The
 database server name may also contain the SQL instance name if the default instance is not
 used.
 - Database Name will be the name of the database to be created, Tracer Ensemble should be used unless otherwise noted by Database Administrator or customer request.
 - If Install Tracer Ensemble has been selected:

- Database Server is the server name of the SQL server computer. If you are not sure of the
 name, open the SQL Server Management Studio. The server name is shown on the Connect
 to Server window. If the SQL Server Management Studio is already running the server name
 is at the top level of the navigation tree, and on the title of the database when selected.
- **Database Name** is the name of the Tracer Ensemble database. It should be Tracer Ensemble unless the database creator chose a different name during the setup.
- Authenticate connection
 - Select Windows authentication... to use your Windows login credentials to authenticate your access to the Tracer Ensemble database. Choose this option if you are typically able to make changes to the database structure without needing to login using a different administrator account.

If **Install Tracer Ensemble and create database** was selected, the installation program will construct the database using the Windows credentials. The Tracer Ensemble system will access the database using the following SQL username and password:

Username: tranedbuser

Password: tes!2345

If **Install Tracer Ensemble** was selected, the Tracer Ensemble system will access the database using the Windows credentials of the current user.

 Select Server authentication..., and then specify the Login ID and Password to be used to log in to the database. Choose this option if you know that you need to use a different administrator account to and make changes to the database.

If **create database** was selected, the entered SQL user is required to have either DbOwner or SysAdmin role for the installation to execute successfully. The installation program will construct the database with the specified SQL user credentials. Tracer Ensemble will access the database using the following SQL username and password:

Username: tranedbuser

Password: tes!2345

If **Install Tracer Ensemble** was selected, the Tracer Ensemble system will access the database using the specified SQL credentials.

- 10. On the E-mail Settings screen, complete the fields according to your e-mail system and click Next.
 - If you do not want to use e-mail notification from Tracer Ensemble, clear Enable E-mail services. The rest of the screen can be ignored.
 - If you *do* want to use e-mail notification, select **Enable E-mail services** and complete the rest of the screen with information about the e-mail account you will use. These settings are the same as you would find in setting up any local e-mail client. The e-mail service provider, whether internal or external, must have created the account and should be able to provide the necessary information.

Figure 6. E-mail Settings

👸 👘 Tracer Ensemble Version 5.1 - InstallShield Wizard 🛛 💌
E-mail Settings Settings to enable E-mail services on the TracerEnsemble server
☑ Enable E-mail services
SMTP Server Name: smtp-us.ingerrand.com
Sender Address: tes_admin@trane.com
SMTP Server User Name: admin
✓ Require Authentication SMTP Server User Password: ●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●
SMTP Server Timeout: 30 seconds
Webserver Hostname used in E-mailed URLs: SPA-TV-TRACER'=R
InstallShield
< Back Next > Cancel

- 11. On the Ready to Install screen, select or clear an option as desired, and then click Next.
 - Select **Start Application Server when complete** if you would like to run the Tracer Ensemble server as soon as installation is complete.
 - Clear **Start Application Server when complete** if you prefer to start the server manually after installation.
- 12. Wait for the installation to complete.
- 13. When the InstallShield Wizard Completed screen appears, click Finish.



Tracer Ensemble First Login

Use the built-in administrative account to log in to Tracer® Ensemble for the first time. This will confirm that the server is running as expected.

To log in to Tracer Ensemble:

- 1. Open one of the following web browsers:
 - Microsoft Edge
 - Google Chrome
 - Mozilla Firefox
 - Apple Safari.
- In the browser Address field, type in the address of the Tracer Ensemble server. If you are logging in on the same computer where Tracer Ensemble is installed, use http://localhost/Virtual Directory Name (For example, most installations by default will be http://localhost/Tracer Ensemble).The Tracer Ensemble login page appears.
- 3. Select an alternate language, if needed, by clicking the button for the desired language. There are some additional regional settings you can change if you edit your preferences.
- 4. Enter Trane for User ID; Tracer for Password and click Login.

Figure 7. Tracer® Ensemble Login Page

TRANE Tracer® Ensemble™						
English fra	çais español Deutsch 中文(简体) 旧版 البريبة Bahasa Indonesia 日本語 한국어 português ኒ애비 中文(繁體) 蜀版					
New Mar						
1000						
	Tracer® Encomplete Muscin					
LING.						
	Password"					
	Log In					
	By accessing Tracer Ensemble, you accept and agree to be bound by the End-User License					
	Agreement Terms and Conditions					
the second						

- 5. Read the license agreement. You must scroll to the bottom of the agreement.
- 6. Click **Yes, I do accept** and **Continue** to indicate your acceptance of the agreement. The Tracer Ensemble Home page appears.



Licensing

- 1. Select Actions and Settings | Tracer Ensemble Licensing.
- 2. Enter the Software Serial Number.

Figure 8. Enter Software Serial Number

Tracer Ensemble Licensing - Register License					
This installation is not licensed. Enter the software serial number which Tracer Ensemble will use to create a server ID. Enter the server ID on the licensing site to create a license file. Upload the license file to this page.					
Software Serial Number	Generate Server ID				
< Action and Settings					

3. Click Generate Server ID.

Figure	9.	Generate	Server	ID
	•••			

Tracer Ensemble Licen	sing - Register License	🖶 🧐
This installation is not licens use to create a server ID. E Upload the license file to thi	ed. Enter the software serial number which Tracer Ensemb ter the server ID on the licensing site to create a license ! s page.	ole will file.
Software Serial Number	E14Z12181 Generate Server ID	
Server ID	40155-B10EE-C340F-BC622-E7F6A-9A804-F0DDC-04E93	Copy To Clipboard What is copy?
Use the Server ID to Cre	ate a License File	
Click this button to go to the From there you can create a file.	BASRegistration.trane.com website in a new browser win license file. Then return to this window to upload the licer	ndow. nse
Go to Website What if	'm offline?	
Upload License File		
License File	[No License File] Browse	
Upload License File		
< Action and Settings		

- 4. Click Copy to Clipboard to copy the Server ID to your clipboard.
- 5. Click Go To Website to create a license file.
- 6. Once you have created a license file, click **Browse** and select the license file.
- 7. Click Upload License File.



Figure 10. Upload License File

Tracer Ensemble Licen	sing - Register Licen	se	🖶 🔮	
This installation is not licens use to create a server ID. E Upload the license file to th	sed. Enter the software s inter the server ID on the is page.	erial number which Tracer Ensemb licensing site to create a license f	ile will île.	
Software Serial Number	E14Z12181	Generate Server ID		
Server ID	40155-B10EE-C340F-BC	C622-E7F6A-9A804-F0DDC-04E93	Copy To Clipboard	What is copy?
Use the Server ID to Cre	ate a License File			
Click this button to go to th From there you can create a file.	e BASRegistration.trane.c a license file. Then return	com website in a new browser win to this window to upload the licer	dow. ase	
Go to Website What if	I'm offline?			
Upload License File				
License File	40155-B10EE-C340F-BC	C622-E7F6A-9A804-F0DDC-04E93	- AppServer.lic Brov	vse
Upload License File				
< Action and Settings				



SAML SSO Setup

Tracer® Ensemble SAML feature is an optional, licensed feature that allows Tracer Ensemble users to use their organization email address and domain password to log in.

SAML (Security Assertion Markup Language) is an open standard that enables users to access multiple web applications with single sign-on (SSO). Security credentials (username and password) can be shared and verified from an Identity Provider to Tracer Ensemble.

System Requirements

- Tracer® Ensemble Version 6.3 or later.
- SAML SSO license must be applied to Tracer Ensemble.
- Configuration of Tracer Ensemble within the Identity Provider (Ping Identity, Okta, Azure, etc.) must be completed first.

Setup Requirements

All users must have a Tracer® Ensemble User Account before they can log in with SAML. This SAML SSO functionality only includes authentication of the user, not authorization. If a user is given access to Tracer Ensemble application within their Identity Provider, they must also have an existing Tracer Ensemble user account. If they do not have an existing Tracer Ensemble user account, you must create a user account for them to log in and authenticate via SAML.

Verify SAML License

To verify the SAML license:

1. Select Actions and Settings from the top right banner.

Figure 11. Actions and Settings



2. Verify that SAML 2.0 Configuration displays under System.

Note: SAML 2.0 requires an additional license. If it does not display under System, upload the license again.

Actions and Settings		
Click links below to access frequently	vused actions and settings.	
Alarms		
Alarm Actions	Panel Communication Alarms	E-mail Addresses
Panel Alarm Subscriptions	Priority Mappings	Alarm Message Templates
Manage Alarm Categories		
Buildings		
Installation	Global Point Control	Change Setpoints
Virtual Buildings	Global Overrides	Set Up Remote Access
Building Attributes		
Documents		
Import Support Files	Support Files Library	
Logs and Reports		
Data Log Attributes	User Change Log	Global Point Control Log
System Tasks	Technician Tools	
Schedules		
Create Exception Schedule	Exception Schedules	Emergency Schedules
Exception Templates	Schedule Attributes	Global Schedules
Appearance and Graphics		
Import Graphics	Custom Graphics	Assign Equipment Graphics
Dashboards		
System		
Database Size	System Parameters	Configure Network Authentication Service
System Status	Tracer Ensemble Licensing	
SAML 2.0 Configuration		
Users and Roles		
	User Profiles	User Roles

Figure 12. SAML 2.0 Configuration

Configuration

To configure SAML:

- 1. Select Actions and Settings from the top right banner.
- 2. Under System, click SAML 2.0 Configuration.
- 3. On the Configuration page, select the toggle switch to enable SAML SSO.

Figure 13. Enable SAML SSO

TRANE Tracer®	Ensen	ble ^m 🏥 All Buildings	🛕 All Alarms	📶 Dashboards & Reports 🔻	Facilities Management 🔻	Sales Der
ons and Setting	js					
	0	Configuration for Single S	Sian-On usina SAM	L 2.0		
	~	•	3			
	•	SAML Setup		Configure Users	Confirm Users	
Tree 🖍		Enable SSO/SAML 2.0				
Site Map Energy Dashboa	ard WI	1 Service Provider Detail	ls			
IAQ AWAIR White Bear Lake	e SC	Use these details for integration Note: HTTPS must be enabled	ng Tracer Ensemble with I for Tracer Ensemble to	your Identity Provider. integrate with your Identity Provid	ler.	
White Bear Lake	e Pivol	Entity ID:		https://beta.ensemblecloud.co	m/TracerEnsemble/	
Minneapolis BCU	U	Assertion Consumer URL	:	https://beta.ensemblecloud.co	m/TracerEnsemble/api/sso/saml/login/AssertionConsumer	Service/
St. Paul Tracker	Paul Tracker Download Service Provider Metadata File: <u>EnsembleMetadata.xml</u>					
Indoor Agricultu	ire Ce					
		2 Configure Identity Pro	vider Details			
		 Configure via Identity 	Provider Metadata U	RL .		
		Metadata URL*:				
		O Configure via Identity	Provider Metadata X	ML File		
		Identity Provider Entity I	D or Issuer*:			
				Note: Find the EntityID in the EntityDescriptor tag having the	Identity Provider Metadata XML file. It is enclosed in attribute as entityID	
		SAME 2.0 Login URL*				
		on it allo adjut on a f		Note: Find the SAML 2.0 Logit the SingleSignOnService tag (B	a URL in the identity Provider Metadata XML file. It is enclosed in inding type: HTTP-Redirect)	
		X.509 Certificate*:				
				Note: Find the X.509 Certificate	te in the Identity Provider Metadata XML file. It is enclosed in	



- 4. In Section 1:
 - a. Note the Service Provider Details (Entity ID, Assertion Consumer URL, and Service Provider Metadata File). You will need these details to integrate Tracer Ensemble with your Identity Provider (for example, Ping Identity, Okta, Azure).
 - b. Select EnsembleMetadata.xml to download the Metadata file.

Note: HTTPS must be enabled for Tracer® Ensemble to integrate with your Identity Provider.

Figure 14. Service Provider Details

ervice Provider Details
ase details for integrating Tracer Ensemble with your Identity Provider. HTTPS must be enabled for Tracer Ensemble to integrate with your Identity Provider.
ntity ID:
ssertion Consumer URL:
ownload Service Provider Metadata File:

- 5. In Section 2, configure the Identify Provider details. The required information will come from your Identity Provider (for example, Ping Identity, Okta, Azure). Select:
- Identity Provider Metadata URL.
- Identity Provider Metadata XML File.

Figure 15. Configure Identity Provider Details

computer dentity Provider Details	
Configure via Identity Provider Metadata URL	
Metadata URL*:	
Configure via Identity Provider Metadata XML File	
Identity Provider Entity ID or Issuer*:	
	Note: Find the EntityID in the identity Provider Metadata XML file. It is enclosed in EntityDescriptor tag having the attribute as entityID
SAML 2.0 Login URL*:	
	Note: Find the SAML 20 Login URL in the identity Provider Metadata XML file. It is enclosed in the SingleSignOnService tag (Binding type: HTTP-Redirect)
X.509 Certificate*:	
	Note: Find the X.509 Certificate in the identity Provider Metadata XML file. It is enclosed in the X500 Certificate are

 In Section 3, specify the email domain(s) that should be allowed to authenticate via your Identity Provider. Public domains (such as gmail.com, outlook.com) are not permitted. Your organization may have one or more email domains applicable. (such as, tranetechnologies.com; trane.com).

To add an email domain, enter the email domain and click Add.

Figure 16. Add Email Domains

mail Domains		
Specify email domains to be allowed to authenticate via your SAML server. We need a list of all the email domains that your users will be using to access Ensemble. Public domains	Type email domain	Add
(e.g., gmail.com, outlook.com, etc.) are not permitted*:	trane.com	Remove

- 7. Click Next.
- 8. The Configure Users screen displays active Ensemble users that either:
- · Do not have an email address associated with their Ensemble user account
- Do not have an email address that matches the email domain(s) that were entered on the previous step.

To allows any of these users access to Ensemble via SAML Single Sigh-On authentication, you must either:

 Add an email address with an email domain that matches the email domain(s) that were entered on the previous step.

- Update the existing email address with an email address that matches the email domain(s) that were entered on the previous step.
- **Note:** Most likely you will have Ensemble user accounts such as Trane technicians, Trane administrator account, and other contractors who will not authenticate via SAML Single Sign-On authentication. They are not employees of your organization and will not have email addresses with email domains that match your organization. These users will continue to login to Tracer Ensemble via their existing credentials.



Configuration for Single Sign-On using SAM, 2.0							
SARL Setup Configure Users Confirm Users							
Configure users to SAHL							
The following use account require action to be converted to SAM, Use the Tages & Harol' coin in the LMM Address columns the address are not read to SAM. The senal address interest in watch the email domains that were added on the previous SAM. Step page. Uses with a checked box in the set Address are not exception to be set the converted to SAM. The set address are not exception to be set the converted to SAM. The set address are not exception to be set the converted to SAM. The set address are not exception to be set the converted to SAM. The set address are not exception to be set the converted to SAM. The set address are not exception to be set the converted to SAM. The set address are not exception to be set the converted to SAM. The set address are not exception to be set the converted to SAM. The set address are not exception to be set the converted to SAM. The set address are not exception to be set the converted to SAM. The set address are not exception to be set the converted to SAM. The set address are not exception to be set the converted to SAM. The set address are not exception to be set the converted to SAM. The set address are not exception to be set the converted to SAM. The set address are not exception to set the converted to SAM. The set address are not exception to be set the converted to SAM. The set address are not exception to be set the converted to SAM. The set address are not exception to be set the converted to SAM. The set address are not exception to be set the converted to SAM. The set address are not exception to be set to be set address are not exception to be set address are not excepting t							
•	User Name	User 3D	E-mail Address +		Active	Role	
0	Vickie Lee-Her	ixlogf	Vickle.LeeHer@incs.com		785	Administrator	
	Vickie Lee-Her	viseher	vickie.Jeeher@ircs.com		165	Administrator	
	Tyler Canterbury	1/240k	Tyler. Canterbury @tranetechnologies.com		765	Advanced Building Operator	

a. To edit a user account and update the email address, click Edit in the E-mail Address column.

	-							
Configuration for Single Sign On using SAM, 2.0								
SAML S	ietup	Configure Users	Confirm Users					
Configu	re users to SAML							
The follow box will ap	The following same accounts require actions to be connected to SAM, Use the "Taper & Pencel" con is the E-Nall Address column to add logitier cares that need to be connected to SAM. The email address entered must match the email domains that were added on the previous SAM. Setup page. Users box will appear on the Confern Users step.							
•								
	Vickie Lee-Her	iribgf	Vidie.Leener@ircs.com		785	Administrator		
	Vickie Lee-Her	vleeher	vickie.leeher@ircs.com		Yes	Administrator		
0	Tyler Carterbury	H2NK	Tyler.Canterbury@tranetechnologies.com	₽ 🔶 —	- 14	Advanced Building Operator		

Figure 18. Edit user account

b. Make the necessary update and click Save.

Figure 19. Save changes

_					
	Tyler Canterbury	H2KR	Tyle: Cantenbury@trane.com	Yes	Advanced Building Operator

- c. Scroll to the bottom of the page and select Next.
- 9. The Confirm Users screen displays all Ensemble user accounts that have an email address with an email domain that matches the domain(s) provided.
 - a. Review the user list to ensure all user accounts listed are users that you want to authenticate via SAML Single Sign-On authentication.

Figure 20. Confirm Single Sign-On accounts

Configu	ration for Single Sign-On using SAML 2.0				0
SAML SI	tup Configur	e Users Confin	m Users		
The followi	neers nor searce, ig user accounts are ready to be converted to SAMC. Uncheck any us	ers that you would NOT like to convert to SAML for sign-on. Uses wi	th a checked box will be converted to SAML for sign-on. If a use	r does not appear on this page, please review their	user account information on the previous page.
	User Name	User ID	U mail Address +	Active	Role
	Welwei Sun	Weiwei	wsun@trane.com	Yes	Administrator
۵	Vivek Kallasam	Virek_K	vivek.kailasam@trane.com	Yes	Administrator
•	Vivel: Kallasam	Visek_KT	vivek.kallasam@trane.com	Yes	Administrator
۰	Vinay Pingale	inpust	VinayPingale@trane.com	Yes	statustest
•	Tyler Carterbury	irizik.	Tyler.Canterbury@trane.com	Yes	Advanced Building Operator
۵	Todd Langmade	lb/ty	TODD JANGHADE@TRANE.COM	Yes	Administrator
•	Tim Beebe	theebe	Tim.8eebe@Trane.com	Yes	Administrator

b. Once the review is complete, select Finish. The Success screen displays.

Figure 21. SAML setup success screen

Actions and Settings				
Click links below to access frequently used	Success		×	
Alarms Alarm Actions	SAML setup has been so	accessfully saved and converted 5 users to Single Sign on.		
Panel Alarm Subscriptions	Priority Macoings	Alarm Message Templates		
Manage Alarm Categories				



 Once SAML configuration is successfully completed, users that were selected to sign in via SAML Single Sign-On authentication will enter their company email address and company domain password on the Log In screen.



Figure 22. Tracer® Ensemble log in screen

Adding New Users to SAML

To add new Tracer® Ensemble SAML users after initial SAML Configuration is complete:

1. Select Actions and Settings from the top right banner.





2. Select Add New User.

Figure 24. Add New User



3. Select Create new SAML Single sign-on User.

Add User Profile		
Complete this page and click next. ("required fields)		
second and halfs and even used (radamen using)		
Select or Define User		
○ Add existing company user account to Tracer Ensemble		
Search or browse for existing user	s,Fill	
Create new SAML Single sign-on User Create new Tracer Ensemble-Only User		
E-mail Address*		
name@domain.com		
First Name*		
Last Name*		
Tracer Ensemble User Settings		
Template for E-mail Alarms	~	
Phone Number 1		
Phone Number 2		
SMS Text Message Address	@message.alltel.com	~
Template for SMS Text Message Alarms	*	
User Role*	~	
Synchrony/Concierge User ID		
Activate this user immediately		
Enable Auto-Logoff for this user		
□ Give this user access to all custom pages		
Building and Subgroup Access		
O Give this user Full access to all buildings		
Define user access to buildings and subgroups		
< Back Next >		

Figure 25. Create new SAML Single sign-on User

- 4. Click Next.
- 5. Complete the User Profile setup. Once completed, the user will have an Ensemble user account configured as an SAML User.



Updating Tracer® Ensemble

Complete this procedure if you are installing Tracer® Ensemble software on a system that already has Tracer Ensemble V2.5 or higher installed. If Tracer Ensemble is older than V2.5, it must be upgraded to V2.5 before upgrading to the current version. The installation program will automatically make changes to a previous version of the Tracer Ensemble database to make it compatible with the latest version of the software.

Note: Tracer Ensemble v4.6+ uses a new license file format which requires a valid Software Maintenance Plan (SMP) license in order to upgrade. A valid license file is required before Tracer Ensemble installer will perform the upgrade.

To upgrade Tracer Ensemble:

- 1. Copy the Tracer Ensemble installation media to a defined location on the workstation.
- 2. The installer will determine if the correct .Net Framework is installed. If the correct version is not installed, the Tracer Ensemble installer will download and initiate the .Net Framework installer.
 - **Note:** If Internet access is not available to the server, a manual download and installation of .Net Framework is required. Tracer Ensemble 4.7+ will not install if the correct framework is not in place.
 - a. When prompted, install the .Net Framework.
 - b. Upon installation of the .Net Framework, the Tracer Ensemble installer will proceed with installation.

Figure 26. Configuring Roles and Features



3. On the welcome screen, click Next.

Figure 27. Welcome



4. The installer will analyze the existing Tracer Ensemble version and license.

Tracer ES License	
Provide cicense for approximg fracer 25	
Existing licesnse does not allow upgrading Tracer ES to the lat A new license request has been generated in the below path	est version.
Desktop\License Request\LicReq.txt	
Provide the location of the new license file for the above licen: with upgrade	se request to proceed
Provide the location of the new license file for the above licen: with upgrade Location:	se request to proceed
Provide the location of the new license file for the above licen: with upgrade Location:	se request to proceed Browse
Provide the location of the new license file for the above licen: Location: Click Cancel to Abort Upgrade	se request to proceed
Provide the location of the new license file for the above licen: with upgrade Location: Click Cancel to Abort Upgrade	se request to proceed
Provide the location of the new license file for the above licen: Location: Click Cancel to Abort Upgrade IstallShield	se request to proceed

Figure 28. Tracer® Ensemble License

Upgrading from Tracer Ensemble v4.5 or below

- a. The installer will determine that the current license is incompatible with Tracer Ensemble v4.6+ and will create a new license request file and saved it the desktop. The installer will not install Tracer Ensemble 4.6+ until a valid license is obtained.
- b. Using the newly created license request file and the Tracer Licensing page, update the existing license with the new Server ID using the Change Hardware path on the licensing server.
- c. Using the Tracer Licensing page, update the license with an appropriate Software Maintenance Plan.
- d. Save the update license.
- e. Re-run the installer if cancelled.
- f. When prompted, upload the new license file.

Upgrading from Tracer Ensemble 4.6+

- a. The installer will determine if the current license has a valid SMP.
 - If a valid plan is detected the installer proceed to Step 6.
 - If an invalid SMP is detected a new license request file and saved it the desktop. The
 installer will not install Tracer Ensemble 4.6+ until a license with a valid SMP is detected.
- b. Using the Tracer Licensing page, update the license with an appropriate Software Maintenance Plan.
- c. Save the update license.
- d. Re-run the installer if cancelled.
- e. When prompted, upload the new license file.
- 5. On the Database upgrade screen, verify the following:
 - Database server name.
 - Database name. This is typically Tracer Ensemble, but may vary.
- 6. Select the method for upgrading the database:
 - Select **Do not upgrade the database** if you are updating the database manually. This option is typically used if the database is managed by an SQL DBA or another user.
 - Select Upgrade the database if you want the installation program to automatically update the database to the current version.

Database Server:	traceres-w7\SQLEXPRES5
D <u>a</u> tabase Name:	TracerES
🖱 Do not upgrad	e database. Database will need to be upgraded manually.
Do not upgrad	e database. Database will need to be upgraded manually. atabase automatically during installation.

Figure 29. Database Upgrade

- 7. Select your SQL authentication method:
 - Select Windows Authentication... to use your Windows login credentials to authenticate your
 access to the Tracer Ensemble database. Choose this option if you are typically able to make
 changes to the database structure without needing to login using a different administrator
 account.
 - Select Server authentication... and then specify the Login ID and Password to login in to the database. Choose this option if you need a different administrator account to make changes to the database.

Figure 30. Database Upgrade Authentication

method must be a	ntication method to upgrade the database. The chosen able to modify the structure of the database.
<u>D</u> atabase Server:	
traceres-w7\SQLE	EXPRESS
D <u>a</u> tabase Name:	TracerES
	1.057
Authenticate conn	nection using:
Authenticate conr	nection using: nentication credentials of current user
Authenticate conr <u>Windows auth</u> <u>Se</u> rver auther	nection using: nentication credentials of current user) ntication using the Login ID and password below
Authenticate conr <u>Windows auth</u> Server auther <u>Login ID:</u>	nection using: nentication credentials of current user) ntication using the Login ID and password below sa
Authenticate conr Windows auth Server auther Login ID: Password:	nection using: nentication credentials of current user) ntication using the Login ID and password below sa

- 8. On the Ready to Install screen, select the appropriate options:
 - Select **Start Application Server when complete** if you want Tracer Ensemble to run immediately after the installation is complete.

• Clear Start Application Server when complete if you prefer to start the server manually after installation.

Figure 31. Ready	y to	Install
------------------	------	---------

Ready to Install the Program The wizard is ready to begin installation.		
Click Install to begin the installation. If you want to review or change any o Click Cancel to exit the wizard.	f your installation settings, clic	k Back.
☑ Start Application Server when con	nplete	
InstallShield	< <u>B</u> ack Install	Cancel

- 9. When the InstallShield Wizard Complete screen displays, click Finish.
- **Note:** If the installation process fails for any reason, the Tracer Ensemble Installer will roll back any file system changes made. IIS will need to be manually reconfigured to use the .NET 2.0 Framework if this happens.



Advanced Configurations and Functions

Windows Services

Windows provides functionality to start and stop services that are running on the server. Tracer® Ensemble runs as a services and can be started, stopped, or restarted.

To start or stop the service:

- 1. Click Start, and then click Control Panel.
- 2. Double-click Administrative Tools.
- 3. Double-click Services.
- 4. Select Trane Tracer Ensemble Application Server service.
- 5. Look in the Status column to determine whether or not the service is running.
 - Started means the service is running.
 - Stopped means the service is not running.
- 6. Choose an action:
 - To start the service, on the Action menu, click Start.
 - To stop the service, on the Action menu, click Stop.
 - The service may require several minutes to start or stop completely.

HTTPS and SSL – Secure Communications Configuration

The following procedure is necessary only if you require secure communications on the Tracer® Ensemble website, specifically HTTPS. If you do not require secure communications, you should use the standard HTTP connection established by the installation program and IIS configuration on the Microsoft Server.

The following steps are involved when configuring HTTPS on the Microsoft Windows Sever:

1. Obtain a certificate.

Before proceeding, you must obtain a server certificate. There are two parts to this step. You must generate a certificate request, then obtain the actual certificate. Generating a certificate request is not a part of Tracer Ensemble, but rather a part of the Microsoft Server that Tracer Ensemble is installed on. The certificate request generation will differ slightly depending on the Microsoft Windows Server Platform on which you are installing it.

There are many certificate vendors and videos to aid customers through this process:

- https://www.youtube.com/watch?v=OIx5kg0YK7U
- https://www.godaddy.com/help/ssl-certificates-1000006
- https://www.digicert.com/csr-creation.htm

After you have the Certificate Request, there are multiple ways to obtain a certificate. One method is to obtain a trusted certificate through a trusted certificate vendor.

Examples of Trusted Certificate Vendors are:

- www.verisign.com
- www.godaddy.com

You can also create a self-signed certificate; however, the process for this will depend on the Microsoft Windows Server Operating System Platform you are using and what version of IIS is running.

Microsoft Corporation provides documentation on how to do this for each version:

- https://support.microsoft.com/en-us/help/228991
- https://msdn.microsoft.com/en-us/library/ff699202.aspx
- 2. Install the certificate.

The installation method will vary depending on your web server and the type of certificate you

purchase. Specific installation instructions, resources, and support are typically offered by your certificate provider or your web host.

Below are links to Trusted Certificate Vendors instructions on installing their certificates:

- https://www.godaddy.com/help/ssl-certificates-1000006
- https://www.wikihow.com/Install-an-SSL-Certificate
- 3. Disable/redirect HTTP.

After HTTPS is enabled on the Microsoft Windows Server Platform hosting Tracer® Ensemble, it is possible to disable/redirect HTTP traffic through the Microsoft Windows Server Platform.

Below is a Microsoft link with instructions on this process for multiple Microsoft Server Platforms:

https://docs.microsoft.com/en-us/iis/configuration/system.webServer/httpRedirect/



Appendix A: Virtual Machine Requirements

For Tracer® Ensemble to be licensed correctly, the processor signature must be persisted within the server. This is CPUID EAX=1 instruction set.

HyperV Configuration

HyperV Virtual server must be configured with Processor Compatibility mode enabled. This obscures the CPUID instruction set allowing Tracer® Ensemble licensing to remain operational upon migration or restart.

VMware ESX(i)

VMWare virtual machines must have the CPUID leaves configured to persist the EAX within the virtual machine configuration file.



Appendix B: Advanced SQL Configuration

If it is determined that the SQL server is consuming most or all of the memory of the server that SQL and Tracer® Ensemble is installed on, follow these steps to limit the amount of memory that the SQL Server can use.

1. Open SQL Management Studio, right click on the SQL Server, and select Properties.

Dat Disconnect Register Disconnect Register New Query Activity Monitor Sec Sec Sec Sec Sec Sec Rej: Stop Ma Pause Resume Restart Policies Facets Start PowerShell Reports Refresh Properties	🖃 🔀 tracere	Connect	11.0.2100 - sa)
Register Resume Restart Policies Facets Start PowerShell Reports Refresh	🖃 🧰 Dat	Disconnect		
 New Query Activity Monitor Ser Ser Ser Start Pause Resume Restart Policies Facets Start PowerShell Reports Refresh 	± 📕	Register		
Activity Monitor Sec Start Start Control Cont	• •	New Query		
Sec Start Ser Start Ser Start Ser Start Ser Start Start Pause Resume Restart Policies Facets Start PowerShell Reports Refresh Properties	± 🧻	Activity Monitor		
 B a chi B a chi Chi Chi Chi Pause Resume Restart Policies → Facets Start PowerShell Reports → Refresh 	⊕ 🧰 Sec ⊛ 🧰 Sen	Start		
	🕀 🦲 Rep	Stop		
Resume Restart Policies > Facets Start PowerShell Reports > Refresh Properties	🕀 🧰 Ma	Pause		
Restart Policies Facets Start PowerShell Reports Refresh Properties		Resume		
Policies Facets Start PowerShell Reports Refresh Properties		Restart		
Facets Start PowerShell Reports Refresh Properties		Policies	×	
Start PowerShell Reports Refresh Properties		Facets		
Reports Refresh Properties		Start PowerShell		
Refresh Properties		Reports	×	
Properties		Refresh		
		Properties		

Figure 32. Select SQL Server Properties

- 2. Select **Memory** and set the Maximum server memory to XXXX MB to limit the SQL server memory consumption to your specified limit.
 - **Note:** Determining what to limit the SQL Servers memory consumption will need to be done on an installation by installation basis.

		10 M	
Select a page P General	🖾 Script 👻 🌆 Help		
Image: Second	Server memory options		
Permissions	Minimum server memory (in MB):		
	0		
	Maximum server memory (in MB):		
	2147483647 🚖		
Connection	Index creation memory (in KB, 0 = dynamic memory):		
Server. traceres-w7\SQLEXPBESS	Minimum memory per query (in NB):		
Connection: sa			
View connection properties			
Progress			-
C Ready	Configured values Punning values		
	OK	Cance	al D

Figure 33. SQL Server Properties

- 3. Click OK.
- 4. Restart SQL for the changes to take affect.
- 5. Restart Tracer Ensemble to reinitialize the connection to the SQL database.



Appendix C: Backup and Restore

Backup

A disaster recovery solution for Tracer® Ensemble systems server should be identified and executed on a customer agreed upon basis. Typically either an automated or manual backup of Tracer Ensemble files and database is required to accomplish this. There are numerous software solutions available at all cost points to accomplish an automated backup solution. Talk with an industry professional to select the best solution for your application.

The following files and databases are critical to Tracer Ensemble and need to be backed up:

SQL Database

- Tracer Ensemble database
- · Primary database (used in extreme disaster recovery circumstances)

Tracer Ensemble files

- <drive path>/Trane/TracerES/Server/bin/trane.OWS.server.exe.config
- <drive path>/Trane/TracerES/Server/metadata/administration/license/lic.dat
- <drive path>/Trane/TracerES/UI/Web.config
- <drive path>/Trane/TracerES/UI/Custom Applications
- <drive path>/Trane/TracerES/UI/Graphics

Restore

The backup files identified above are required to restore a Tracer® Ensemble system to the previous state. Examples of when you need to restore Tracer Ensemble include when the operating system (OS) for your Tracer Ensemble server has been reinstalled, when the Tracer Ensemble server is moved to new hardware, or a Virtual Machine is created for Tracer Ensemble. The process to restore Tracer Ensemble is the same for each situation.

To restore Tracer Ensemble:

- 1. Using SQL management studio restore the Tracer Ensemble database.
- 2. Identify the Tracer Ensemble version to install on the new server.
 - a. After the Tracer Ensemble database has been restored, expand the database folder, Tracer Ensemble database and tables.
 - b. Locate the dbo.ApplicationVersion table, right click, and select top 1000 rows.
 - c. Note the application version (last row is the current version of software from backup).
- 3. Install the Tracer Ensemble version identified in step 2 for proper restore.
 - a. Select Install Tracer Ensemble only.
 - b. Populate the database information with the restored Tracer Ensemble database name and user credentials of the SQL server.
 - c. Do not start Application Server after installation is complete.

Note: If an upgrade is desired at this time we recommend restoring the Tracer Ensemble system, verify operation and then proceed with a software upgrade.

- 4. Copy the following files to the Tracer Ensemble installation location:
 - <drive path>/Trane/TracerES/Server/bin/trane.OWS.server.exe.config
 - <drive path>/Trane/TracerES/UI/Web.config
 - <drive path>/Trane/TracerES/UI/Custom Applications
 - <drive path>/Trane/TracerES /UI/Graphics
- 5. Start Tracer Ensemble.
- 6. Log in o Tracer Ensemble. Navigate to Actions and Settings | Tracer Ensemble Licensing.
- 7. Click Register Site License.

- 8. All information should be populated. Licensing information cannot be changed during this process. If it is not populated, populate the required fields and click **Next**.
- 9. Download a new license request file to update the Server ID within the Trane licensing system.
- 10. See Updating Tracer Ensemble for updating license server ID.
- 11. Download new license from Trane licensing system. Upload new license to Tracer Ensemble.
- 12. Navigate to Actions and Settings | Tracer Ensemble Licensing.
- 13. Click View Panel Licensing. Activate panels that were deactivated during the restore process.
- 14. Verify communications is restored to system panels.
- 15. Verify operation of Tracer Ensemble system.



Appendix D: Direct Link with Tracer SC

Direct link allows Tracer® Ensemble users to access the Tracer SC user interface from links within Tracer Ensemble without requiring an additional log on to Tracer SC. These links are created and displayed for buildings with Tracer SC V3.1+. Both Tracer Ensemble and Tracer SC must be configured for direct link access.

Direct Link Requires:

- Tracer Ensemble V3.5+.
- Tracer SC V3.5+ (high performance user interface).

Single Sign On for Direct Link Requires:

- Tracer Ensemble V4.0+.
- Tracer SC V3.5+ (high performance user interface).

Configuring Tracer SC for Direct Link

1. Log in to the Tracer® SC user interface via the Tracer SC application or Tracer Ensemble direct link.



Tracer SC v4.10.1079 (release)	
	User ID PasswordLog In
	Download mobile app



Figure 35. Access Tracer® SC via Tracer® Ensemble Direct Link

- 2. Click on Tools.
- 3. Double click on Tracer Ensemble IP Address.

Figure 36. Tracer® Ensemble IP Address

		🌟 Favorites 🔌 Home 🥊 Alarms 🛔 User 👼 Admin 🕢 Help			
Jeff's SC Test Environment	Tools	You are logged in as Trane Trane (Trane) Outdoor Conditions			
Tree	10013	Humiday			
Applications	The following list contains links to pages that ser	ve as tools to help manage your Tracer SC system. Select a tool to open the associated page.			
 Building Summary 	Tool	Description			
- Alarms	Backup and Restore	Start backup activities for the Tracer SC, or restore the Tracer SC from an existing backup file.			
	Custom Graphics	Delete custom graphics from the facility.			
· Spaces	Global Referencers	View and edit the Global Referencers available in the Tracer SC.			
= Equipment	User Equipment Keys View, import and export user equipment keys in the Tracer SC.				
	Equipment Templates	View, import and export equipment templates in the Tracer SC.			
 Data Logs 	System Logs	View and export system logs for the Tracer SC.			
: Points	Tracer ES IP Address	View and Edit the Tracer ES IP address for Direct Linking.			
	Resource Usage	View usage of system resources.			
 Alarm Configuration 	BACnet Information	View detailed information about BACnet on the Tracer SC.			
Tools					
 Installation 					
Devices					

4. Enter the IP address of the Tracer Ensemble server.

Figure 37. Tracer® Ensemble Server IP Address

TRANE		📩 Favorites	🔏 Home	Alarms	🙏 User	🧾 Admin	🕜 Help
Jeff's SC Test Environment	Tracer ES IP Address			You an Trane 1	e logged in as Trane (Trane)	Outdoor Co	Humidity
• Applications	C Tools						۵ 🗵
 Building Summary 	Enter the IP address of the Tracer ES used for Direct Linking.						
• Alarms							
· Spaces							
Equipment							
* Data Logs							
• Points							
 Alarm Configuration 							
• Tools							
· Installation							
Devices							

5. Click Save.

Note: This process must be repeated for every Tracer SC that you want to access from Tracer Ensemble for single sign on to work. This is not required for direct links from Tracer Ensemble to function properly, but users will need to log on to Tracer SC when accessing it from Tracer Ensemble if not set up correctly.

Configuring Tracer Ensemble for Direct Link

- 1. In Tracer® Ensemble, click the Actions and Settings icon.
- 2. Click User Profiles.
- 3. Click the appropriate user name.
- 4. Click Edit Profile.
- 5. In the **SC User ID** field, enter the Tracer® SC user name.

Edit User Profile	(*required fields)	8
Complete this page and dick next.	(Tequired heids)	
User ID*	TESAdmin	
First Name*	Tracer Ensemble	
Last Name*	User Administrator	
E-mail Address		
Template for E-mail Alarms	-	
Phone Number 1		
Phone Number 2		
SMS Text Message Address		@message.alltel.com
Template for SMS Text Message Alarms	•	
User Role*	Administrator 🔹	
SC User ID	Trane	
Enable Auto-Logoff for this us Give this user access to all cu	ser stom pages	
Building and Subgroup Access		
Give this user Full access to a Define user access to building	II buildings	
< Back Next >		

Figure 38. Edit User Profile

6. Click **Next** and then **Finish** to save your changes.

Note: If you edited your own user profile, you will be prompted to log in again, as your security settings have changed.

User Access to Direct Links

You can optionally allow or deny users access to direct links to Tracer® SC based on their user role.

- 1. In Tracer® Ensemble, click the Actions and Settings icon.
- 2. Click User Roles.
- 3. Select the role that you want to edit.
- 4. Click the Edit button.
- 5. Click Next through the wizard until you reach the Application Permissions page.
- 6. Set the access level direct links to Tracer SC in the **Direct Link to Panel** section. **Yes** will display Tracer SC links for users with this role and **No** will hide the links.

Figure 39. Edit User Role

Edit User Role	2								
Complete this page and click Next.									
Role Information Name Description May reset personal password May change personal	Administrator Tracer Ensemble System Administrator Yes Yes								
preferences	100								
Application Permissions Click Yes to allow or No to prohibit this role to perform the function.									
Alarms	Access	Schedules	Access						
View	◉ Yes © No	View	● Yes [©] No						
Delete		Edit	◉ Yes [©] No						
Acknowledge	◉ Yes [©] No	Create/Delete	◉ Yes [©] No						
Insert Comments	◉ Yes © No	Apply/Cancel Exceptions	◉ Yes [©] No						
Edit Alarm Routing	◉ Yes [©] No	Create/Edit Exceptions	● Yes [©] No						
Configure Alarm Recipients	◎ Yes [©] No	Apply/Cancel Emergency Schedule	◉ Yes ◎ No						
Ignore	◉ Yes [©] No								
Data Logs	Access	All Data Logs	Access						
View	◉ Yes © No	View	◉ Yes © No						
Edit	◉ Yes © No	Edit	● Yes © No						
Create	◉ Yes © No	Delete	◉ Yes [©] No						
Delete	◉ Yes [©] No								
Overrides Access		Global Change	Access						
Advanced Overrides)	Edit	◉ Yes [©] No						
Point Service)	Direct Link To Panel	Access						
Top Override Priority	mergency 💌	Tracer SC	● Yes [©] No						
< Back Next	>								

7. Save your changes.



Trane - by Trane Technologies (NYSE: TT), a global innovator - creates comfortable, energy efficient indoor environments for commercial and residential applications. For more information, please visit trane.com or tranetechnologies.com.

Trane has a policy of continuous product and product data improvements and reserves the right to change design and specifications without notice. We are committed to using environmentally conscious print practices.